



Draft Patent Specification for

Title: Method and System for Targeted Distribution

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The present invention relates generally to computers and communications, and more specifically, to a method and system for targeting distribution of information over computer networks.

5 **Background of the Invention**

****area of technology**

It is well known that data communication networks such as the Internet, Wide Area Networks (WANs) and Local Area Networks (LANs), offer tremendously efficient means of organizing and distributing computerized data. These efficiencies
10 have resulted in their widespread use for both business and personal applications. For example, the Internet is now a common medium for operating online auctions, academic and public forums, distributing publications such as newspapers and magazines, and performing electronic commerce and electronic mail transactions.

The hardware and software used to implement the Internet, as well as the
15 content that is carried, all have a cost. In many other media, such as television and radio, the cost to end users is nominal because advertisers pay for most of the cost of the infrastructure. However, there are no effective ways of managing advertising over the Internet.

The Internet is an excellent medium for advertising because of the rich
20 formatting, including for example, sound, animation and personal interaction with the End User. As well, the Internet is pervasive in developed countries and the cost for creation of the content is minimal.

While the Internet is an international communication network, advertising and much other content has only local value. Hence, in order to for advertising to be
25 effective, some efficient manner of targeting advertising to users based on their geographical location is required.

Figure 1 presents an exemplary layout of an Internet communications system
30 **30**. The Internet **32** itself is represented by a number of routers **34** interconnected by an Internet backbone **36** network designed for high-speed transport of large amounts of data. User's computers **38** may access the Internet in a number of manners including modulating and demodulating data over a telephone line using audio frequencies which requires a modem **40** and connection to the Public Switched Telephone Network **42**, which in turn connects to the Internet **32** via an Internet

Service Provider **44**. Another manner of connection is the use of set top boxes **50** which modulate and demodulate data onto high frequencies which pass over existing telephone or television cable networks **52** and are connected directly to the Internet via Hi-Speed Internet Service Provider **54**. Generally, these high frequency signals
5 are transmitted outside the frequencies of existing services passing over these telephone or television cable networks **52**.

Web sites are maintained on servers **38** also connected to the Internet **32** which provide content and applications to the User's computers **38**. Communications between user's computers **38** and the rest of the network **30** are standardized by
10 means of defined communication protocols.

Internet Service Providers (ISPs) **44**, **54** or Internet Access Providers (IAPs), are companies that provide access to the Internet. ISPs **44**, **54** are considered by some to be distinguished from IAPs in that they also provide content and services to their subscribers, but in the context of this disclosure the distinction is irrelevant. For
15 a monthly fee, ISPs **44**, **54** generally provider end users with the necessary software, username, password and physical access. Equipped with a telephone line modem **40** or set top box **50**, one can then log on to the Internet **32** and browse the World Wide Web, and send and receive e-mail.

Figure 1 is something of a simplification, as ISPs are often connected to the Internet **32** through Network Access Points (NAPs), rather than directly as shown in
20 **Figure 1**. As well, the Internet itself is far more complex than that shown in **Figure 1**. However, these details would be well known to one skilled in the art.

The Internet is a connectionless network service, in that a single communication may be broken up into a multitude of data packets that follow different
25 paths in flowing between the same source and destination. Traditional telephony in contrast, establishes a single path that all of the data in the communication follow.

The Internet consists of a vast interconnection of computers, servers, routers, computer networks and public telecommunication networks which allows two parties to communicate via whatever entities happen to be interconnected at any particular
30 time. Presently, the systems that make up the Internet comprise many different varieties of computer hardware and software. In general, this variety is not a great hindrance as the Internet is unified by a small number of standard transport protocols. These protocols transport data as simple packets, the nature of the packet

contents being inconsequential to the transport itself. The difficulty lies in the receiving end which must determine how the contents of the received packet are to be read.

~~**other approaches (do not call them prior art or known)~~

5 Typically, advertising on the Internet today is non-discriminant. The same advertisements are presented to any end user who accesses a given web page, regardless of who they are or where they are from. Some web pages have a large number of advertisements that are cycled through, so that a different advertisement may appear each time one accesses the page, but again, this is done in a non-
10 discriminant basis.

 Obviously, this approach is not efficient, as some viewers will not be in the geographic marketing area of the advertiser, which may be limited to a continent, country or region. While it is known how to monitor the number of end users who have viewed a web page or an advertisement, it is not possible to determine how
15 many of those end users are part of the targeted group. Therefore, this form of advertising has little commercial value.

 Some web sites monitor the preferences of end users accessing their web sites, and record those specifics. One method of doing this is to collect "cookies" from end users. Cookies are messages given to a Web browser by a Web server
20 when the end user accesses that web server, which the browser stores in a text file. The cookie is then sent back to the web server each time the web browser requests a web page from the web server.

 The main purpose of cookies is to identify end users and possibly prepare customized Web pages for them. However, the creation of user preference
25 databases are generally considered by the public to be an invasion of privacy, so there is pressure to create laws or apply existing laws to prevent such monitoring. Such monitoring has also encouraged the development of anonymous servers, which serve as intermediaries to disguise end users from the web sites they wish to access.

 Many dial up ISPs use Dynamic Host Configuration Protocol (DHCP) which
30 dynamically assigns IP addresses to subscribers when they call up. Therefore, a device can have a different IP address every time it connects to the network, and in some systems, the device's IP address can even change while it is still connected.

Dynamic addressing simplifies network administration because the software keeps track of IP addresses rather than requiring an administrator to manage the task. This means that a new computer can be added to the network without the inconvenience of manually assigning it a unique IP address. Because the end user is not associated with a unique address, existing methods which create a preference database for that end user, will not work.

Another proposal is to create databases which will provide geographic locations based on the IP address of the user. In addition to the cost of creating and maintaining these databases, which would require continuous modification and updating, this approach still requires the user's actual IP address, which again, raises privacy concerns.

Another approach is to use the existing global positioning system (GPS) to identify the geographic location of end users. The GPS is a system of 24 satellites for identifying earth locations, launched by the U.S. Department of Defense. By triangulation of signals from three of the satellites, a receiving unit can pinpoint its current location anywhere on earth to within a few meters. However, such systems require special, expensive hardware and software, and even with this equipment, DNS routing tables still must have a translation table to direct packets through the Internet. It is not reasonable to expect that such DNS tables will become common due to their high cost.

It has also been proposed that IPv6 be designed to accommodate location information. IPv6 is the next generation IP protocol, which among other things, expands the address space from 32 to 128 bits. Therefore, the address space has sufficient room to include both a backward compatible IP address, as well as geographic data. However, this would require universal agreement or standardization, which has not occurred. As well, IPv6 has not been widely implemented, and will likely require some time to replace the currently pervasive IPv4 legacy hardware and software. Internet routers which form the backbone of the Internet, will require routing tables in order to know where to direct data packets. Hence, IPv6 will not be able to employ geographic routing to any significant extent until a large percentage of the existing routers have been modified. Without standardization, this will not happen.

****conclusion****

If the above problems could be overcome, geographical targeting could be used for far more than simply advertising. Any content which is of regional interest could be distributed, including local news, stock quotations, weather reports, road conditions and public meetings.

5 There is therefore a need for a means of targeting geographic audiences over the Internet and similar networks, provided with consideration for the problems outlined above.

Summary of the Invention

10 It is therefore an object of the invention to provide a method and system which obviates or mitigates at least one of the disadvantages described above.

One aspect of the invention is broadly defined as ~~claim 1 in plain language~~ a method of targeted distribution over a communication network comprising the steps of: an End User sending a request to an Internet Service Provider (ISP), for a web
15 page from a Web Site; and the ISP returning the web page to the End User, including targeted content based on the location of the ISP.

Another aspect of the invention is defined as a system for targeted distribution of content over a communication network comprising: an End User; an Internet Service Provider (ISP); and a communication network for interconnecting the End
20 user and the ISP; the End User being operable to: send a request to the Internet Service Provider (ISP) for a web page; and the ISP being operable to: return the web page to the End User, including targeted content based on the location of the ISP.

Brief Description of the Drawings

25 These and other features of the invention will become more apparent from the following description in which reference is made to the appended drawings in which:
Figure 1 is a physical layout of an exemplary communication network as known in the prior art;

Figure 2 is a flow chart of a method of targeted distribution in a preferred
30 embodiment of the invention.

Figure 3 is a block diagram of a system of targeted distribution in a preferred embodiment of the invention; and

Figure 4 is a flow chart of a method of targeted distribution in a preferred embodiment of the invention.

Detailed Description of Preferred Embodiments of the Invention

5 A methodology which addresses the objects outlined above, is presented as a flow chart in **Figure 2**. This figure presents ~~** recite claim 1 here~~ a method of targeted distribution over a communication network which is initiated when an End User sends a request to his Internet Service Provider (ISP) for a web page at step **60**. The ISP returns the requested web page to the End User at step **62**, including
10 targeted content based on the location of the ISP.

~~** describe operation of claim 1~~

 The communication network may be one of many known in the art, and may consist of several different networks working together, including wireless networks such as cellular telephone networks, the public switched telephone network, cable
15 television networks, the Internet, ATM networks, frame relay networks, local area networks (LANs) and wide area networks (WANs).

 The End User may send his request to his ISP using a number of different devices including a computer, smart terminal, personal digital assistant, Internet-ready telephone or other similar interface. Such devices are well known in the art.

20 The web page that has been requested is not intended to limit the claimed invention, and could include text, graphics, audio files, executable applets, data files or attachments such as software files, or other data and files known in the art.

 The ISP may obtain the web page from a number of sources, though generally it will be from the Web Site maintaining the page. Often, however, the
25 same content may be available in a memory cache on the ISP's equipment, or in a similar cache elsewhere on the communication network. As well, Web Sites may have mirror sites to which the request may be directed.

 Once the ISP obtains the web page data, it inserts targeted content which is determined by the location of the ISP itself. The targeted content will most likely
30 include advertising, but may also include other information of regional interest, including road maps, weather reports, local news and announcements, stock quotations and public meetings.

This information may be stored on the ISP's equipment, or obtain from any other location accessible over the communication network.

****addressing the prior art disadvantages**

5 The invention of **Figure 2** addresses the problems in the art. It allows advertisements and other content to be directed geographically, which makes such advertising far more effective and should address the cost issues which presently hinder growth of the Internet.

No additional hardware is required as in the case of the GPS solutions, and DNS routers do not need to be modified. Therefore, there is no additional cost to the
10 End User and the invention may be applied without affecting the existing network. As well, the invention is independent of whether IPv4 or IPv6 is being used.

Because the targeting is determined by the location of the ISP and does not require the IP address of the end User, the invention also operates with Dynamic Host Configuration Protocol (DHCP) systems.

15

**** describe preferred embodiment**

The preferred embodiment of the invention is presented in by means of the block diagram in **Figure 3**, and the flow chart of **Figure 4**. **Figure 3** identifies the relevant parties in the transaction of the invention, and does not present the same
20 level of detail as **Figure 1**.

A number of End Users **70** are presented, who have access to the Internet **32** via their ISP **72**. The End Users **70** may employ computers **38** as in **Figure 1**, or other interface devices as known in the art, and as will emerge as technology evolves. These End Users **70** may access their ISP **72** in different ways, such as via
25 cable modem, telephone line mode, or wireless methods, which is not limited by the invention.

Via the Internet **32**, the End Users **70** then have access to various Web Sites **74**, who provide them with web pages and other content. The Web Sites **74** and ISP **72** also have secure access to an advertising server **76** which stores the regional
30 content. The advertising server **76** is described in greater detail hereinafter.

The corresponding method of the invention is presented as a flow chart in **Figure 4**. This method is initiated by end user sending a request to an Internet Service Provider, for a web page from a Web Site, at step **80**. This step will generally

be effected by the End User searching through the resources of the World Wide Webs, using his Web Browser. A Web browser is an application program that runs on the end user's computer 38 and provides a way to look at and interact with all the information on the World Wide Web. A Web browser uses HTTP to make requests of
5 Web servers throughout the Internet on behalf of the Web browser user. Currently, most Web browsers are implemented as graphical user interfaces.

When the end user enters file requests by either "opening" a Web file, typing in a Uniform Resource Locator (URL), or clicking on a hypertext link, the Web browser builds an HTTP request and sends it to the Internet Protocol address
10 indicated by the URL. The HTTP software in the destination server machine receives the request and, after any necessary processing, the requested file is returned.

The Hypertext Transfer Protocol (HTTP) is the set of rules for exchanging files on the World Wide Web, including text, graphic images, sound, video, and other multimedia files. HTTP also allows files to contain references to other files whose
15 selection will elicit additional transfer requests (hypertext links). Typically, the HTTP software on a Web server machine is designed to wait for HTTP requests and handle them when they arrive.

Next, at step 82, the ISP receives the request from the End User and send a request to the Web Site with a tag indicating that targeted advertising is to be applied.
20

The Web Site identifies the tag and returns the requested web page with identifiers in place of the usual advertising that they generate themselves, at step 84. As well, this web page still has the targeted advertising tag intact.

When the web page with the tag is received by the ISP, it responds at step 86 by querying an advertising server to obtain the local advertising software code, or
25 other regional content.

The local advertising server 76 responds at step 88 by:

1. identifying the physical location of the ISP 72;
2. indexing a database of advertising software code or other regional content, using physical location of the ISP 72;
- 30 3. returning the advertising software code to the ISP 72; and
4. recording the transaction for accounting purposes.

Upon receipt of the local advertising software code at step 90, the ISP simply inserts the software code into the web page and sends it to the end user.

The physical location of the ISP may be determined at step 72, in a number of manners including the following:

1. Indication by ISP

5 Of course, the ISP could simply identify its physical location to the advertising server when it places its request. To streamline the process, the advertising server could standardize the references, rather than using latitude and longitude, it could for example, provide listings of towns, cities and counties that the ISP associates itself with.

10 2. IP Address

Internet Protocol (IP) addresses are identifiers for computers or devices on an Internet network, which are used to route messages. The format of an IP address in IPv4 is a 32-bit number which consists of a network prefix, and a host number. In "subnet" networks, the 32-bits are shared with a third component - the "subnet number".

15 The network prefix, or network prefix and subnet number in combination (sometimes referred to as the extended network prefix), identifies the ISP, or at least its network access point (NAP). Therefore, this information can be used to identify the physical ISP that an end user is connected to. With this information, the advertising server can send the proper regional content to the end user.

20 The number of unassigned Internet addresses is running out, so a new "classless" scheme called Classless Inter-Domain Routing (CIDR) is gradually replacing the system based on classes A, B, and C and is tied to adoption of IPv6. With CIDR, IP addresses still have a network prefix and subnet number, but the formatting has changed. Therefore, the invention can be applied to CIDR just as easily as the existing IP class system.

25 3. MAC or DLC Address

30 In networks, a node is a processing location, and can be a computer or some other device, such as a printer. Every node has a unique network address, sometimes called a Data Link Control (DLC) address or Media Access Control (MAC) address.

A Media Access Control (MAC) address is a hardware address that uniquely identifies each node of a network. In IEEE 802 networks, the Data Link Control (DLC) layer of the OSI Reference Model is divided into two sublayers: the Logical Link Control (LLC) layer and the Media Access Control (MAC) layer. The MAC layer interfaces directly with the network media.

On networks that do not conform to the IEEE 802 standards but do conform to the OSI Reference Model, the node address is called the Data Link Control (DLC) address.

If the ISP does not transmit its physical address in its request, the advertising server may use the Address Resolution Protocol (ARP) to convert the IP address into a physical address, such as a DLC address. The advertising server wishing to obtain a physical address broadcasts an ARP request onto the Internet. The server on the network that has the IP address in the request (the ISP in this case) then replies with its physical hardware address.

The invention is not limited by the nature of the Web page being transmitted. Could be used to insert simple banners into web pages, or more sophisticated multimedia ads. As well, these ads could be sent along with real audio, real video, telephone over Internet, vide conferencing over Internet, etc.

The invention could also be applied to cellular wireless applications, as cellular systems are local systems. As a car travels from one cell to the next, the cellular network would have to track the user in order to maintain the communication. It would necessarily know which cell the user is in. As web sites would recognize the MAC address of the cellular provider, the advertising may change as the end user moves from one cell to the next.

**** conclusion**

While particular embodiments of the present invention have been shown and described, it is clear that changes and modifications may be made to such embodiments without departing from the true scope and spirit of the invention.

In the preferred embodiment, an advertising server is used which will administer advertising in an effective and secure manner, accounting for the financial agreement between the various Web Server and ISPs. However, the web site may perform this functionality itself, in fact, it may implement the invention without the knowledge of either the ISP or the End User. Alternatively, the ISP could replace

advertising in web pages received from Web Sites with its own content, or simply add its own advertising banners or headers to web pages.

The method steps of the invention may be embodiment in sets of executable machine code stored in a variety of formats such as object code or source code.

5 Such code is described generically herein as programming code, or a computer program for simplification. Clearly, the executable machine code may be integrated with the code of other programs, implemented as subroutines, by external program calls or by other techniques as known in the art.

10 The embodiments of the invention may be executed by a computer processor or similar device programmed in the manner of method steps, or may be executed by an electronic system which is provided with means for executing these steps.

Similarly, an electronic memory medium such computer diskettes, CD-Roms, Random Access Memory (RAM), Read Only Memory (ROM) or similar computer software storage media known in the art, may be programmed to execute such
15 method steps. As well, electronic signals representing these method steps may also be transmitted via a communication network.

The invention could, for example, be applied to computers, smart terminals, personal digital assistants and Internet-ready telephones. Again, such
20 implementations would be clear to one skilled in the art, and do not take away from the invention.